

Application No. 10/646,805
Amendment under 37 CFR 1.111
Reply to Office Action dated January 27, 2006
April 27, 2006

REMARKS

By this amendment, claim 2 has been cancelled and its subject matter has been incorporated into independent claim 1. Currently, claims 1-9 are pending in the application. Claims 4-9 are currently withdrawn from consideration as being directed to a non-elected invention.

Claim 1 was rejected under 35 U.S.C. 102(e) as being anticipated by Yadav et al. (U.S. Patent No. 6,849,109).

This rejection is respectfully traversed in view of the amendments to the claims and the following remarks.

The present invention relates to a resistive composition to be used for a resistor to detect electric currents that flow in the current detecting circuits or the like, a resistor using the same, and a making method thereof.

The resistive paste, which is a resistive composition, is made of a first conductive metal mixed powder containing copper powder, manganese powder, and germanium powder and/or a second metal mixed powder made of copper, manganese, and germanium which includes alloy powder made of at least two or more of the metals

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copper, manganese, and germanium; glass powder and/or copper-oxide powder (copper oxide powder) to be mixed with the metal mixed powder; and vehicle including resin and solvent, and a resistor is made by using this resistive paste (see page 5, lines 3-12).

In the metal mixed powder of the above-mentioned first and/or second resistive paste, when the entire amount of mixed powder is 100 parts by weight, 4.0 to 13.0 parts manganese by weight, 0.2 to 1.4 parts germanium by weight, and 85.6 to 95.8 parts copper by weight are mixed as metal components. In addition, the above-mentioned glass powder is 0 to 10 parts by weight, and copper-oxide powder is 0 to 10 parts by weight relative to the entire amount (100 parts by weight) of such metal components (see page 5, lines 13-19).

The resistive paste contains at least either the glass powder or copper-oxide powder as such adhesive components, and the combination of both being 0 parts by weight is excluded since adhesion with the substrate is lost (see page 6, lines 3-6).

Moreover, the viscosity of the resistive paste suitable for printing is preferably achieved by compounding 10 to 15 parts

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vehicle by weight including resin and solvent in order to make the resistive elements by paste (see page 6, lines 7-11).

In the resistive paste according to this embodiment, other than the metal mixed powder made of copper, manganese, and germanium powders, the metal powder that includes an alloy powder made of at least two or more of such metals may be used as the conductive metal mixed powder, or both powders may be used (see page 6, lines 12-16).

Independent claim 1 has been amended to recite "wherein said resistive composition includes a mixture of 85.6 to 95.8 parts copper by weight, 4.0 to 13.0 parts manganese by weight, and 0.2 to 1.4 parts germanium by weight when the entire amount of said first metal mixed powder and/or said second metal mixed powder is 100 parts by weight; greater than 0 to 10 parts of at least one of said glass powder and said copper-oxide powder by weight; and 10 to 15 parts vehicle by weight relative to 100 parts of said first metal mixed powder and/or said second metal mixed powder by weight."

These features are not shown or suggested by Yadav et al.

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Yadav et al. relate to non-stoichiometric substances and more particularly to nanostructured non-stoichiometric substances and products incorporating such substances.

Yadav et al. specifically disclose an ink composition wherein the nanopowders comprise at least two elements selected from actinium, aluminum, antimony, arsenic, barium, bismuth, cadmium, calcium, cerium, cesium, copper, dysprosium, erbium, europium, gadolinium, gallium, gold, hafnium, antimony, boron, germanium, indium, nitrogen, phosphorus, selenium, sulfur, tellurium, iridium, iron, lanthanum, lithium, magnesium, manganese, mendelevium, mercury, molybdenum, neodymium, neptunium, nickel, niobium, osmium, palladium, platinum, potassium, praseodymium, promethium, protactinium, rhenium, rubidium, scandium, silver, sodium, strontium, tantalum, terbium, thallium, thorium, tin, titanium, tungsten, vanadium, ytterbium, yttrium, zinc, and zirconium (see column 48, lines 23-37).

Yadav et al. also disclose that some resistors are prepared from coating resistor inks consisting of a glass, metal particle dispersion in a viscous organic binder (see column 39, lines 27-29).

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Applicant respectfully submits that Yadav et al. do not disclose a resistive composition including a mixture of 85.6 to 95.8 parts copper by weight, 4.0 to 13.0 parts manganese by weight, and 0.2 to 1.4 parts germanium by weight when the entire amount of said first metal mixed powder and/or said second metal mixed powder is 100 parts by weight; greater than 0 to 10 parts of at least one of said glass powder and said copper-oxide powder by weight; and 10 to 15 parts vehicle by weight relative to 100 parts of said first metal mixed powder and/or said second metal mixed powder by weight.

For these reasons, it is believed that Yadav et al. do not teach or suggest the claimed features of the present invention. Therefore, it is respectfully requested that this rejection be withdrawn.

Claim 1 was rejected under 35 U.S.C. 103(a) as being obvious over Teraoka (Japanese Patent Application Publication No. 2002-367804) in view of Clifford (WO 96/03466). This rejection is respectfully traversed for the following reasons.

Applicant hereby submits an English translation of applicant's priority application (Japanese Patent Application No.

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2002-267610). This translation supports applicant's claim for priority to the priority application and therefore applicant is entitled to the September 13, 2002 priority date. This priority date is earlier than the publication date of the Teraoka reference (December 20, 2002). Therefore, applicant respectfully requests the Examiner to withdraw this rejection when acting on this Amendment.

Claims 2-3 were objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

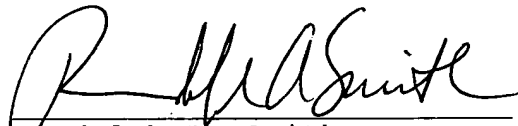
The subject matter of original claim 2 has been amended and incorporated into claim 1. The specific portion in claim 2 which was objected to has been rewritten in claim 1 as "greater than 0 to 10 parts of at least one of said glass powder and said copper-oxide powder by weight" to exclude the case where both the glass powder and the copper-oxide powder are 0 parts by weight. It is therefore respectfully submitted that by this amendment, the objection under 37 CFR 1.75(c) be withdrawn.

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In view of foregoing claim amendments and remarks, it is respectfully submitted that the application is now in condition for allowance and an action to this effect is respectfully requested.

If there are any questions or concerns regarding the amendments or these remarks, the Examiner is requested to telephone the undersigned at the telephone number listed below.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Randolph A. Smith", written over a horizontal line.

Randolph A. Smith
Reg. No. 32,548

Date: April 27, 2006

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